GOLF PUTTER HEAD

CROSS-REFERENCE TO RELATED APPLICATION

[0001] This application claims priority to U.S. Provisional Application No. (Attorney Docket Number 8572-00012/US), filed January 12, 2004, titled "Golf Putter Head" of Timothy M. Green.

FIELD OF THE INVENTION

[0002] The present invention relates generally to golf equipment and more particularly to golf putter heads.

BACKGROUND OF THE INVENTION

[0003] Golf enthusiasts and equipment manufacturers have continually sought to improve golf clubs, including putters, for many years. These efforts have included the addition of structures to improve the play of the clubs and structures designed as teaching aids to assist in instruction and use of particular clubs. For example, elements have been developed to assist in teaching effective putting technique.

SUMMARY OF THE INVENTION

[0004] The present invention is directed to golf putter heads and methods of using the same. In one embodiment, the golf putter head generally includes a striking surface and a reflective surface extending above the striking surface for reflecting an image of a golf ball (or at least a portion thereof) to a user when the striking surface is positioned adjacent the golf ball. The golf putter head further includes an alignment surface positioned behind the striking surface. The alignment surface includes at least one indicator for aligning the striking surface with the golf ball.

[0005] In another embodiment, a golf putter head generally includes a striking surface, a surface extending above the striking surface, and an alignment surface positioned behind the striking surface. The golf putter head has a center of gravity positioned above a center of gravity of a golf ball when the striking surface is positioned adjacent the golf ball. A shaft hole positioned ahead of the center of gravity of the golf putter head.

[0006] In another embodiment, a putter head generally includes a first striking surface, a second surface extending above the first striking surface, and a third surface extending rearwardly behind the striking surface. The second and third surfaces have aligned indicators.

[0007] In another form, the invention provides methods of aligning a golf putter head with a golf ball. In one implementation, the method generally includes positioning a striking surface of the golf putter head relative to the golf ball such that the golf ball is aligned with an axis passing through a center of a reflected image of the golf ball (or at least a portion thereof) on a reflective surface extending above the striking surface and is aligned with an indicator defined by an alignment surface positioned behind the striking surface.

[0008] Further areas of applicability of the present invention will become apparent from the detailed description provided hereinafter. It should be understood that the detailed description and specific examples, while indicating at least one exemplary embodiment of the invention, are intended for purposes of illustration only and are not intended to limit the scope of the invention.

BRIEF DESCRIPTION OF THE DRAWINGS

[0009] The present invention will be more fully understood from the detailed description and the accompanying drawings, wherein:

[0010] FIG. 1 is a front perspective view of a golf putter head according to an embodiment of the present invention;

[0011] FIG. 2 is a front elevation view of the golf putter head shown in FIG. 1;

[0012] FIG. 3 is a rear elevation view of the golf putter head shown in FIG. 1;

[0013] FIG. 4 is a left elevation view of the golf putter head shown in FIG. 1;

[0014] FIG. 5 is a right elevation view of the golf putter head shown in FIG. 1;

[0015] FIG. 6 is a top plan view of the golf putter head shown in FIG. 1;

[0016] FIG. 7 is a bottom plan view of the golf putter head shown in FIG. 1;

[0017] FIG. 8 is a top plan view of a golf putter head according to another embodiment of the invention;

[0018] FIG. 9 is a top plan view of a golf putter head according to another embodiment of the invention;

[0019] FIG. 10 is a top plan view of a golf putter head according to another embodiment of the invention;

[0020] FIG. 11 is a top plan view of a golf putter head according to another embodiment of the invention.

[0021] FIG. 12 is a top plan view of a golf putter head according to another embodiment of the invention;

[0022] FIG. 13 is a front perspective view of a golf putter head according to another embodiment of the invention;

[0023] FIG. 14 is a front perspective view of a golf putter head according to another embodiment of the invention; and

[0024] FIG. 15 is a rear elevation view of a golf putter head according to another embodiment of the invention.

[0025] Corresponding reference characters indicate corresponding features throughout the drawings.

DETAILED DESCRIPTION OF EXEMPLARY EMBODIMENTS

[0026] Referring to FIGS. 1 through 7, there is shown a golf putter head, generally indicated by reference number 110, according to one embodiment of the present invention. The golf putter head 110 includes a striking surface 112 and a reflective surface 114 which extends above the striking surface 112. The reflective surface 114 reflects an image of a golf ball 116 to a user when the striking surface 112 is positioned adjacent the golf ball 116. The golf putter head 110 further includes an alignment surface 118 positioned behind the striking surface 112. The alignment surface 118 includes an indicator 120. As described in detail below, the reflective and alignment surfaces 114 and 118 can be used by a golfer to statically and dynamically align the putter head 110 with the golf ball 116. As used herein, the term "golf ball" shall be construed to include golf balls approved by the United States Golf Association (USGA) and golf balls approved by the Royal and Ancient Golf Club of St. Andrews.

[0027] In FIG. 6, the alignment surface 118 includes only one circular indicator 120. The circular indicator 120 is sized such that its diameter is about equal, and preferably is equal, to the golf ball's diameter. In addition, the color of the indicator 120 can be white or other suitable color (e.g., yellow, pink, orange, etc.) so as to even further resemble a golf ball.

[0028] Alternatively, a wide range of other non-circular geometric shapes can be used for the indicator, including semicircular shapes, triangular shapes, rectangular shapes, etc. By way of example, FIG. 8 illustrates an exemplary golf putter head 210 having an alignment surface 218 defining a semicircular indicator 220. In addition, the size of the indicator can also vary.

[0029] In addition, the alignment surface may define any number of (i.e., one or more) indicators which can vary in size and have diameters larger, smaller, and/or about equal to a golf ball diameter. For example, FIG. 9 illustrates an exemplary golf putter head 310 having a single circular indicator 320 with a diameter larger than the diameter of the golf ball 316. FIG. 10 illustrates an exemplary golf putter head 410 having a circular indicator 420 with a diameter smaller than the

diameter of the golf ball 416. FIG. 11 illustrates an exemplary golf putter head 510 having two generally circular indicators 520 and 520', each of which are of similar size to the golf ball 516.

[0030] In various embodiments, the alignment surface and indicators can have a monolithic construction and be integrally formed as a single component. Alternatively, the alignment surface and indicator may comprise separate components in which case the indicator can be attached to the alignment surface, for example, by welding, adhesives, and/or other suitable fastening methods.

[0031] As shown in FIG. 6, a guide line 124 is defined by the indicator 120. The guide line 124 is aligned with a center of the striking surface 112. The guide line 124 is generally perpendicular to the striking surface 112.

[0032] In a preferred embodiment, the guide line 124 comprises a groove inscribed in the indicator 120. The groove is preferably highlighted or colored (e.g., with paint, etc.) so as to increase the contrast between the guide line 124 and the surface of the indicator 120, thus making the guide line 124 more readily visible.

[0033] Alternatively, the indicator and guide line can be separate components in which case the guide line can engaged to the indicator, for example, by welding, adhesive, and/or other suitable fastening methods. Still further embodiments include a golf putter head 610 which does not have a guide line defined by the indicator 620, as shown in FIG. 12.

[0034] With reference to FIGS. 1 through 6, the reflective surface 114 reflects an image of a golf ball 116 to a user when the striking surface 112 is positioned adjacent the golf ball 116. The reflective surface 114 is preferably muted so to render the putter head 110 in compliance with USGA rules. By way of example only, an exemplary embodiment includes a reflective surface 114 which has been roughened so as to mute the reflective properties of the surface 114. In another embodiment, a coating can be applied to the reflective surface 114 with the coating decreasing the reflective nature of the surface 114.

[0035] The reflective surface 114 includes a center guide line 128 positioned between two diverging guide lines 130. The center guide line 128 is

positioned relative to the indicator guide line 124 such that the two lines 124 and 128 appear as a single line to a golfer looking downward at the putter head 110 when the golfer's head is directly over the putter head 110, which is generally regarded as the proper head position for putting.

[0036] In some embodiments, however, the reflective surface does not include a center guide line and/or diverging guide lines. For example, FIG. 13 illustrates an exemplary golf putter head 710 in which the reflective surface 714 includes a center guide line 728 but not diverging guide lines.

[0037] Further, the entire surface extending above the striking surface 112 is reflective in FIG. 1. In other embodiments, however, such is not the case. For example, FIG. 14 illustrates an exemplary golf putter head 810 in which the reflective surface 814 is disposed only between the diverging guide lines 830. The reflective surface 814 reflects an image 817 of a portion of the golf ball 816. The portion 815 outside the guide lines 830 is not reflective as represented by the speckles.

[0038] Referring now to FIG. 3, the golf putter head 110 further includes a heel portion 132, a toe portion 134, and a rear surface 136 positioned opposite (*i.e.*, on a backside of) the striking surface 112 and the reflective surface 114. The golf putter head 110 also includes a weighted perimeter portion 138 adjacent the heel portion 132 and a weighted perimeter portion 140 adjacent the toe portion 134.

[0039] In the illustrated embodiment, the weighted perimeter portions 138 and 140 are defined by enhanced sidewall buttresses which function to distribute weight wider than the golf ball 116. This, in turn, increases the effective contact area of the striking surface 112 with the golf ball 116. In other words, the relatively extreme heel and toe weighting due to the weighted perimeter portions 138 and 140 extends or increases the "sweet spot" of the striking surface 112. Accordingly, the weighted perimeter portions 138 and 140 thus allow the putter head 110 to be more forgiving and more effective at delivering a truer hit to the golf ball 116 when the point of contact between the golf ball 116 and the striking surface 112 does not coincide with the location of the center of mass of the putter head 110.

[0040] The rear surface 136 also includes a weighted perimeter portion 142 which extends above the striking surface 112, shown in phantom in FIG. 3. In the illustrated embodiment of FIGS. 1 through 7, the weighted perimeter portion 142 extends along both sides 144 and 146 of the golf ball 116 when the striking surface 112 is positioned adjacent the golf ball 116 on the putting surface 148. The weighted perimeter portion 142 also extends substantially from the heel portion 132 to the toe portion 134. The weighted perimeter 142 may also extend above and substantially around an upper hemisphere of the golf ball 116 when the striking surface 112 is positioned adjacent the golf ball 116 sitting on the putting surface 148.

[0041] As shown in FIG. 3, the rear surface 136 has at least one cavity or recessed portion 150 therein. A portion of the cavity 150 extends above the striking surface 112 so as to define the weighted perimeter portion 142 on the rear surface 136. Stated differently, the recessed portion 150 defines at least one non-recessed portion 152, which constitutes the weighted perimeter portion 142 of the rear surface 136. In one embodiment, the cavity 150 is generally centered between the heel portion 132 and the toe portion 134 of the golf putter head 110.

[0042] In FIG. 3, the rear surface 136 is shown having only one cavity 150. It should be noted, however, that the rear surface 136 may be provided with any number of cavities, and these cavities can be shaped and positioned as necessary to locate the center of gravity 154 of the putter head 110 and provide the putter head 110 with a weighted distribution as desired. In addition, any of a wide range of geometric shapes may be used for the cavity 150, such as circular shapes, triangular shapes, octagonal shapes, etc.. By way of example only, the cavity 150 in FIG. 3 is substantially diamond-shaped, although other suitable shapes can be employed.

[0043] In the illustrated embodiment, the golf putter head 110 also includes weights 156 attached to the rear surface 136. The weights 156 may have a density that is either higher, lower, or the same as the density of the rear surface 136 depending on the weight distribution that is desired for the putter head 110. The weights 156 may be removably attached to the rear surface 136. If removable, the

weights 156 can be added and/or removed as desired even after the putter head 110 is manufactured. The weights 156 may also be positioned within a cavity (e.g., 150) defined in the rear surface 136. In the preferred embodiment, the golf putter head 110 includes two weights 156 each of which is positioned within the diamond-shaped cavity 150. Alternatively, other embodiments do not include weighted inserts, such as the golf putter head 910 shown in FIG. 15.

[0044] Preferably, the weights 156 and weighted perimeter portions 138 and 140 distribute a substantial portion of the weight of the putter head 110 higher and wider than the golf ball 116 so as to better distribute the impact force between the striking surface 112 and the golf ball 116. This, in turn, increases a golfer's opportunity at achieving a straighter and truer putt of the golf ball 116 with the putter head 110.

[0045] Further, the various putter head features (e.g., the striking surface 112, reflective surface 114, alignment surface 118, weighted perimeter portions 138, 140 142, weights 156, etc.) are designed (e.g., sized, positioned, material selections, etc.) to position the center of gravity 154 for the putter head 110 as desired horizontally and vertically. In the embodiment shown in FIGS. 1 through 6, the weighted perimeter portion 142 extends not only above the center of gravity 158 of the golf ball 116 but above the top edge 160 of the golf ball 116 as well when the golf ball 116 and putter head 110 are both resting on a generally horizontal or level putting surface 148.

[0046] As best shown in FIGS. 4 and 5, the center of gravity 154 of the putter head 110 is located above the golf ball's center of gravity 158. Indeed, various embodiments include a center of gravity 154 of the putter head 110 which is located above the top edge 160 of the golf ball 116 as well when the golf ball 116 and putter head 110 are both positioned on the putting surface 148.

[0047] Positioning the putter head center of gravity 154 above the golf ball's center of gravity 158 enables the putter head 110 to more readily impart topspin and rolling to the golf ball 116 instead of causing the ball to skip and/or slide

as is the case for putter heads which have a center of gravity lower than a center of gravity of a golf ball.

[0048] With further reference to FIGS. 4 and 5, the golf ball's center of gravity 158 is about 0.84 inches (2.13 centimeters) above the putting surface 148, whereas the golf ball's top edge 160 is about 1.68 inches (4.27 centimeters) above the putting surface 148. The center of gravity 154 of the putter head 110 is preferably located a distance equal to or greater than about 1.00 inch (2.54 centimeters) above a bottom surface of the putter head 110. Stated differently, the center of gravity 154 of the putter head 110 is preferably located a distance equal to or greater than about 1.00 inch (2.54 centimeters) above a level putting surface 148 when the putter head 110 is resting on a level putting surface 148. Accordingly, the center of gravity 154 of the putter head 110 is above the golf ball's center of gravity 158 when the putter head 110 and golf ball 116 are both resting on a level putting surface 148.

[0049] In addition, the alignment surface 118 is preferably designed along with other putter head features (e.g., enhanced sidewall buttresses 138 and 140, etc.) so as to move the putter head's center of gravity 154 further rearward from the striking surface 112. In the exemplary embodiment shown in FIGS. 4 and 5, the rearward location of the center of gravity 154 is rearward of a shaft hole 162 and shaft 164 (shown in phantom). Still referring to the exemplary embodiment of FIGS. 4 and 5, the center of gravity 154 of the putter head 110 is preferably located behind the striking surface 112 a distance equal to or greater than about 1.00 inches (2.54 centimeters).

[0050] By having a more rearward center of gravity 154 which is above the golf ball's center of gravity 158, the putter head 110 is able to impart a greater moment arm and thus greater roll distance, and more immediate rolling, to the golf ball 116 with less stroke power, e.g., with a softer and slower stroke. Because a slower and softer putting stroke is usually more easily controlled, the putter head 110 can improve a golfer's chances of maintaining a straight line during a putting stroke.

[0051] In various embodiments, the golf putter head can have a monolithic construction in which the golf putter head is integrally formed as a single component. Alternatively, the golf putter head may comprise two or more separate components that are secured to one another, for example, by welding, adhesives, and/or other suitable fastening methods.

[0052] For example, any one or more of the various golf putter heads 110 (FIGS. 1 through 7), 210 (FIG. 8), 310 (FIG. 9), 410 (FIG. 10), 510 (FIG. 11), 610 (FIG. 12), 710 (FIG. 13), 810 (FIG. 14), 910 (FIG. 15) can include monolithic reflective and alignment surfaces (e.g., 114 and 118, 214 and 218, 314 and 318, 414 and 418, 514 and 518, 614 and 618, 714 and 718, 814 and 818, and 914 and 918).

[0053] By way of example only, the golf putter head 110 in FIGS. 1 through 7 includes monolithic reflective and alignment surfaces 114 and 118 which are integrally formed as a single component. The striking surface 112 and/or weights 156, however, can be separate components which are secured to the putter head 110. In an exemplary embodiment, the striking surface 112 is defined by a front surface of an insert formed of a material different than the putter head body, and the weights 156 comprise inserts formed of a heavier and higher density material than the material from which the monolithic reflective and alignment surfaces 114 and 118 are formed.

[0054] The putter head 110 can be used as follows to statically align the putter head 110 with the golf ball 116. At address, a golfer positions the striking surface 112 adjacent the golf ball 116 so as to align the golf ball 116 with an axis passing through a center of a reflected golf ball image on the reflective surface 114 and to align the golf ball 116 and to align the indicator guide line 124 with the golf ball diameter perpendicular to the striking surface 112.

[0055] Further, the indicator's guide line 124 and reflective surface's center guide line 128 can be used to indicate when the golfer's head is positioned directly over the putter head 110, which is generally regarded as the proper head position for putting. More specifically, the guide lines 124 and 128 will appear as a

single line to the downwardly looking golfer when the golfer's head is directly over the putter head 110.

[0056] Dynamic alignment of the putter head 110 with the golf ball 116 during a putting stroke can be maintained as follows. During the backswing, the reflected golf ball image visually travels up the reflective surface 114. Conversely, the reflected golf ball image visually travels down the reflective surface 114 during the forward swing.

[0057] Ideally, the golfer keeps the moving image of the golf ball centered on the reflective surface 114, and thus centered relative to the putter head 110, during both the backswing and forward swing. To assist the golfer with this feat, the reflective surface 114 includes the guide lines 128 and 130, as shown in FIG. 6. By keeping the moving reflected image of the golf ball 116 centered along the center guide line 128 and/or between the guide lines 130, the golfer is able to keep the putter head 110 dynamically aligned with the golf ball 116.

[0058] In addition, the indicator guide line 124 can further assist the golfer in maintaining the dynamic alignment of the putter head 110 and the golf ball 116 during the putting stroke. The golfer can maintain the alignment by keeping the indicator guide line 124 aligned with the axis passing through the center of the moving reflected image of the golf ball 116.

[0059] The description of the invention is merely exemplary in nature and is in no way intended to limit the invention, its application, or uses. Thus, variations that do not depart from the substance of the invention are intended to be within the scope of the invention. Such variations are not to be regarded as a departure from the spirit and scope of the invention.